

ABSTRACT OF THE DISCLOSURE

A resist is coated on a substrate. The resist is exposed to a pattern of a plurality of diffraction gratings for setting  
5 pitches corresponding respectively to oscillation wavelengths for the plurality of semiconductor lasers and for setting heights of the diffraction gratings which provide an identical coupling coefficient independently of the oscillation wavelengths. The coating is etched in such a manner that the  
10 level of etching per unit time is identical. A stripe mask is patterned according to the arrangement of the diffraction gratings. A laser active layer is formed on each of the diffraction gratings by selective MOVPE growth. An electrode is formed on each of the laser active layer on its top surface  
15 and the backside of the substrate. By virtue of this constitution, an optical semiconductor device and a process for producing the same can be realized which, when a plurality of semiconductor lasers are simultaneously formed on a single semiconductor substrate, can prevent a variation in coupling  
20 coefficient.